

first and seventh arches; on the others the fringes are developed from the outer and convex portion of the arch, and are not at first prolongations of the internal gills.

(6.) The nostrils, as in all Vertebrates, consist at first of pits or indentations in the integuments; secondly, a lobe is developed on the inner border of each; and, finally, the two lobes become connected, and thus form the homologue of the fronto-nasal protuberance. The transitional stages of these correspond with the adult conditions of them in other species of Selachians.

(7.) The nasal grooves are compared with the nasal passages of air-breathing animals, and the cartilages on either side of these to the maxillary and intermaxillary bones.

(8.) The foremost part of the head is formed by the extension of the facial disk forward. While this extension is going on, the cerebral lobes change their position from beneath the optic lobes to one in front of them.

(9.) Two anal fins, one quite large and the other very small, are developed, but both are afterwards wholly absorbed.

(10.) The dorsals change position from the middle to the end of the tail. At the time of hatching, however, there is still a slender terminal portion of the tail, which is afterwards either absorbed or covered up by the enlarged dorsals, as they extend backward.—*Memoirs of the American Academy*, vol. ix. pp. 31–44.

On Dimorphism in the Hymenopterous Genus Cynips.

By BENJAMIN D. WALSH, M.A.

The Cynips studied by Mr. Walsh make galls on a species of oak, the *Quercus tinctoria*. Part of these galls produce males and females of the *Cynips spongifica* in June. Another portion of them, of wholly similar general character, remain green till autumn, and produce in October and November, and also in the following spring, another form of Cynips—the *Cynips aciculata*, hitherto regarded as a distinct species, all the individuals of which are females. Mr. Walsh appears to prove that the latter, although widely different in many characters, is only another form of the *C. spongifica*, and thence that this species is dimorphous. The individuals produced in June live but six or eight days; what place in nature, then, the author asks, is filled by the *C. aciculata*? In reply, he suggests, from the analogy of *Apis*, *Bombus*, &c., that “the female *aciculata* generates galls, which produce by parthenogenesis male *spongifica*, and that the females and males of the latter, coupling in June, oviposit in the same month, in the young buds of the oak, eggs that remain dormant till the following spring, some of which then produce female *spongifica* in June and some female *aciculata* in the autumn or early in the following spring, and these last, in their turn, generate male *spongifica* to appear in the following June.” He continues, “It may also be the case that some few male *spongifica* are generated by female *spongifica*.” The author next sustains this opinion by mentioning some of the analogies that have been observed in other Hymenopterous insects.—*Proceedings of the Entomological Society of Philadelphia*, March 1864, pp. 443–500.